Study the Plant Species Diversity under Different Maturity Stages of Oil Palm Cultivation

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Abstract

Essentially an edible vegetable oil derived from an African palm tree known as the palm oil. Popular belief is that palm oil is a useful asset due to its versatility and economic impact. However, recently many viewers expressed their criticisms against the oil palm cultivation, highlighting its negative effects on environment. Those criticisms leading to restrict the establishment, expansion and replanting of oil palm cultivation in Sri Lanka. Biodiversity destruction is one of such criticism raised by the viewers. Hence there is an obligatory requirement to conduct research studies to justify those criticisms to develop and expand the oil palm industry in Sri Lanka. The main objective of this study was to identify the plant species diversity in oil palm cultivation at different maturity stages. The experiment was conducted as a field study at Yatalamatta division, Nakiyadeniya oil palm Estate. Six maturity classes were selected from the plantation. Experimental plots, with sized of 1.5m*1.5m each, were selected randomly, using random table. Twenty plots per maturity class were received. The quadrate method was used to study the plant species. Shannon's diversity index and Menhinick's Species Richness Index were used to calculate the diversity according to six maturity stages. Thirty-five different plant species were identified, it indicated a composite of mixed (plants), weeds of broadleaves, grasses, and with a small count of ferns. The growth of broadleaf was more dominant with sixteen species than the grasses with three species and ferns with four species. The plant species richness and Shannon's Diversity Indexes were varied with the age of oil palm plantation. According to the results of the study, species diversity expressed by Shannon's Diversity Index was the highest in mature oil palm plantation (16-20 years – H=2.52) and the lowest in young plantation (8-12 years – H= 1.55).

Keywords: Maturity stages, Menhinick's species richness index, Plant species diversity, Shannon's diversity index,

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